

Contact for Abstracts

Ms. Ogarit Uhlmann
Conference Secretary

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Please download abstract template from conference website and note guidelines for preparing your abstract. Please send your abstract to the conference secretary stating the topic it belongs to (A, B, ...) and whether it is a lecture or poster abstract.

Local Organizing Committee

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Oliver Kraft (KIT)

Detlef Löhe (KIT)

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Transportation

Karlsruhe is located south of Frankfurt and can be easily reached by airplane, train or car.

Airports:

High speed train connection (1h) to Frankfurt International Airport. Local airport Karlsruhe/Baden-Baden with connections to many European cities.

Train: From the main station it is just minutes by public transportation to the conference center, the downtown area and the University campus of KIT.



The conference will be held at the Conference Center (www.karlsruhe-kongress.de), which is located in the center of the city. It can host more than 10 parallel sessions and its main lecture hall can take an audience of 1700 people.

Karlsruhe

Karlsruhe is located in the heart of Europe, in the Southwest of Germany. Situated adjacent to the mighty river Rhine, the city meets the border to France. The climate is very pleasant – its location in the Rhine valley makes Karlsruhe Germany's second warmest city.

The city has approx. 300.000 inhabitants. Karlsruhe can be easily reached via plane, train and car. The region of Karlsruhe is considered as a center of advanced technology in particular for engineering, information technology and nanotechnology.

Sightseeing

Karlsruhe has a very nice downtown area with a castle and a number of historic sites nearby. Tourist attractions in the close surroundings include the cities of Heidelberg and Baden-Baden, the Black Forest and the Alsace as recreational areas, for hiking and other outdoor activities. Also, the area of Karlsruhe is famous for its vines and cuisine.

For more information please visit:
www.karlsruhe-tourismus.de

Accommodation

Are you looking for a hotel room to make your stay perfect? We have a certain amount of pre-booked rooms for you. Please visit our website:
www.icm12.com

Conference Dinner

Rennbahn Iffezheim / Baden-Baden

The racetrack Iffezheim near Baden-Baden is arguably one of the most beautiful racetracks in Europe. As one of the biggest organizers of races in Germany it has a high international reputation. Racing at Baden-Baden has a long tradition. The racetrack built in the village of Iffezheim near the French border opened in 1858 and quickly developed into one of the leading tracks not only in Germany but worldwide. **Transport to Iffezheim will be provided (shuttle service).** There you will have the chance to visit the parade ring, have a look at the horses and become acquainted with the jockeys. Enjoy betting on horses and get excited to watch the race. Afterwards we are serving a special Baden-Baden hot and cold conference dinner buffet for your refreshment.

The shuttle bus will bring you back to Karlsruhe.

Registration Fees

Early registration	Full registration
650,00 Euro	750,00 Euro
(payment before March 31st, 2015) includes: coffee breaks, welcome reception, lunches and social dinner	(after March 31st, 2015) includes: coffee breaks, welcome reception, lunches and social dinner
Students* (early)	Students* (after)
300,00 Euro	400,00 Euro
(payment before March 31st, 2015) Student registration includes: coffee breaks, welcome reception, lunches and social dinner	(after March 31st, 2015) Student registration includes: coffee breaks, welcome reception, lunches and social dinner

- *For student registration, you must send your Student ID (or other proof of your student status) via e-mail to registration@icm12.com.
- Registration for Accompanying Person: **150,00 Euro.**
- You will have the chance to register online for this conference soon.

Important Dates

Abstract submission, beginning 01.09.2014
through the website, end 01.12.2014
Notification of acceptance/rejection: 15.01.2015

Call for Papers



May 10-14 2015 | Conference Center

ICM 12 – KARLSRUHE

12th International Conference on
the Mechanical Behavior of Materials

www.icm12.com

SCOPE

There is no doubt that the worldwide efforts to increase social and economic wealth critically depend on improved materials and manufacturing techniques. In particular, the mechanical behavior of materials has always been a decisive factor for industrial and socio-economic development. Progress in this field presents major challenges for today's researchers in both industry and academia.

Following a long standing tradition dating back to the efforts of the late Professor Shuji Taira, who organized the first International Conference on Mechanical Behavior of Materials (ICM) in Kyoto, Japan in August 1971, the upcoming ICM 12 will take place from May 10th to 14th 2015 in Karlsruhe, Germany.

ICM's objectives are to foster research on the mechanical behavior of materials, to promote international cooperation among scientists and engineers and to provide means for the public dissemination of the results from these efforts. Held every four years, these conferences are intended to cover progress on all aspects of the mechanical behavior of materials from both the macroscopic and microscopic viewpoints. The scope of interest includes commercial materials, including metals, polymers, ceramics, composites, as well as advanced materials under development for the use in particular applications.

ICM brings together users, producers and researchers, both engineers and scientists who have a common interest in various aspects of material behavior. The objective is to facilitate and encourage the exchange of knowledge and experience among different communities involved in using, improving, developing, assessing materials by conducting basic and applied research. The conference aims to explore the scale integration (micro-, meso- and macroscopic) behavior as well as an integrated approach to aspects of design, manufacturing and mechanical reliability.

Multiscale phenomena in plasticity ^(A)

Stefan Sandfeld, Erlangen, Germany | **Shigenobu Ogata**, Osaka, Japan
Katrin Schulz, Karlsruhe, Germany

This symposium brings together experts from the computational, experimental and theoretical communities to discuss, how multiscale material models in conjunction with experimental input can be used to model and predict the mechanical behavior of materials. Phenomena of interest are dislocations and point defects, stacking faults and grain boundaries, amorphous plasticity, phase transitions, diffusion and creep, corrosion and fatigue.

Residual stresses ^(B)

Cevdet Noyan, New York, USA | **Berthold Scholtes**, Kassel, Germany
Philip J. Withers, Manchester, UK

Residual stress fields in materials can have significant impact on performance, lifetime or functionality of components and can be both detrimental and beneficial. In this symposium all aspects of the formation, analysis and effects of residual stress states in materials and components will be explored. Both the scientific and the engineering issues of the field will be addressed. Contributions based on modeling and simulation, as well as on experimental methods are welcome.

Cyclic deformation behavior, crack initiation and crack growth of metals ^(C)

Dietmar Eifler and Tilmann Beck, Kaiserslautern, Germany
Masahiro Endo, Fukuoka, Japan

The symposium features new results and advances in the fields of materials fatigue and life prediction in the LCF, HCF and VHCF regime. It brings together scientists and design engineers to present their latest work on current issues in investigation, multiscale modeling and simulation of fatigue mechanisms, enhancement of fatigue strength and quantitative relationship between microstructure and fatigue properties, and life prediction.

Further sessions are planned on:

- Polymers and related composites ^(K)
Frank Henning & Thomas Böhlke, Karlsruhe, Germany
- Lightweight alloys and structures ^(L)
- Ultrastrong metallic and non-metallic glasses ^(M)

> Please check www.icm12.com for further information

In-situ microscopy and diffraction ^(D)

Christian Kübel and Julia N. Wagner, Karlsruhe, Germany
Crisitan Mocuta, Gif-sur-Yvette, France

In order to understand the thermo-mechanical behavior of materials and the underlying mechanisms in detail, a direct observation of the processes involved is necessary. The symposium "in-situ microscopy and diffraction" is aimed to address recent progress in in-situ methods covering all aspects of TEM, SEM, neutron and synchrotron radiation based studies. The symposium will focus on thermo-mechanical properties of all material classes, e.g. metals, semiconductors, ferroelectrics and organic systems.

Size effects and small-scale mechanical behavior of materials ^(E)

Ruth Schwaiger, Karlsruhe, Germany
Guang-Ping Zhang, Shenyang, PR China

Deformation and failure mechanisms in materials become size-dependent when sample dimensions and/or microstructures approach the sub-micrometer regime illustrating the trend "smaller is stronger". This symposium will focus on the interplay between microstructural and deformation length-scales with the goal to reveal the fundamental principles and deformation mechanisms leading to size effects in the mechanical behavior and failure of materials and structures. Experimental contributions but also closely related modeling papers of nanoscale mechanical deformation are encouraged.

Advanced steels & steel composite materials ^(F)

Wolfgang Bleck, Aachen, Germany | **Sybrand van der Zwaag**, Delft, The Netherlands | **Horst Biermann**, Freiberg, Germany

Modern steels, such as TRIP, TWIP steels and Q&P, are based on multiphase microstructures with dimensions ranging from 1 nanometer to 100 micrometer in a single product. The symposium invites contributions dealing with design, processing, properties, testing and microstructure of novel steels as well as steel-based composite materials. Contributions on property-microstructure relationships as well as on the design of new steels and steel-matrix composites are welcome. The contributions can cover experimental as well as computational work.

Fracture mechanics ^(G)

Vadim Silberschmidt, Loughborough, U.K.
Thomas Seelig, Karlsruhe, Germany

This symposium aims to contribute to a deeper understanding of the interrelation between the microstructure of materials and their macroscopic fracture behavior under various loading and environmental conditions by bringing together related research in experimental testing, microstructural characterisation as well as theoretical and numerical studies. Special emphasis will be on spatio-temporal evolution of fracture processes, underpinning mechanisms and multi-scale approaches and schemes. Contributions on all classes of materials are invited.

Materials for fission and fusion ^(H)

Anton Möslang, Karlsruhe, Germany | **Rick Kurtz**, Richland, USA
Akihiko Kimura, Kyoto, Japan

This Symposium is dedicated to recent advances in science and technology of structural and functional materials of nuclear fission and fusion energy and is primarily focused on their mechanical properties. Of interest are advanced materials such as low activation or high-temperature alloys, superalloys, composites, functional materials like ceramics and related coatings. Correlations between microstructure and properties, scientific understanding of irradiation damage, corrosion and aging as well as theoretical modeling of experiments are likewise welcome.

High temperature materials ^(I)

Gunther Eggeler, Bochum, Germany | **Easo P. George**, Oak Ridge, USA

Efforts to increase the efficiency and to extend the lifetime of energy conversion facilities are supposed to exhibit outstanding mechanical strength and creep resistance at high temperatures as well as corrosion and oxidation resistance. This Symposium will present and discuss the current state of progress in development, manufacturing and behavior of cast, wrought and powder-metallurgical high temperature high temperature metallic and intermetallic materials. Besides state-of-the-art materials such as Superalloys, recent advances in pushing the temperature limits for all materials will be addressed with a particular emphasis on metal- or intermetallic-based with temperature capability beyond that of Superalloys.